

A CONNECTOR**Background of the Invention**

- 5 This invention relates to an electrical connector. It finds particular, although not exclusive use in connectors for removable data cards, such as SIM cards in portable telephones. Other removable data cards include electronic payment cards, and data storage cards such as SD or MMC cards.
- 10 Portable telephones operating according to the GSM communication standard, amongst other standards, require the user to insert a SIM (Subscriber Identity Module) card before a communication link can be established with a host network. The SIM card is a type of so-called smart card, and has an embedded integrated circuit which contains information
- 15 specific to a particular user, and enables him to access a communication network. Without a SIM cards, a portable telephone can generally only be used for emergency calls to a pre-defined number.
- The SIM card has on its surface a number of discrete contact regions. These
- 20 regions are planar conductive areas which internally connect with the embedded integrated circuit. Each region is insulated from its neighbors, and is intended to be contacted by a suitable reader forming part of a host device, such as a portable telephone. Typically, contact between the reader of the host device and the card has been effected using sprung metal contacts
- 25 which are resiliently biased to contact respective regions of the SIM card.

An example of a connector suitable for use as a SIM card reader is shown at Figure 1 of the accompanying drawings. The connector 100 comprises a body portion 110 composed of an insulating plastics material. The body portion

30 houses a number of electrical connectors. On the upper surface of the body portion are six sprung electrical contacts 120 arranged to make contact with

100333-22001

282
7/5/04

Mounted on the surface of the can 410 is the SIM card reader 300. The domes 330 are oriented away from the can. The other end of the reader 300 terminates in a connector 420 which couples the reader to the circuit board
5 400, and thus to the processor of the telephone, enabling the SIM card to be accessed.

The SIM card 500 is located in a recess in a cover 430 of the telephone. It is held in place in the recess through use of a small sprung clip 440. Alternative
10 means of holding it in place are possible. For instance, a sliding catch arrangement similar to that shown in Figures 2a and 2b could be used to secure the SIM card in position.

Once the SIM card is secured in the recess, it is brought into contact with the
15 reader simply by attaching the cover 430 to the telephone. The cover may be attached in any convenient manner provided that a firm attachment is achieved. For instance, a known technique of attaching a telephone cover is a sliding connection including latches to firmly grip the cover. Alternatively, the cover may be attached with screws or other retaining devices. This technique
20 is more suitable for situations where regular changing of the SIM card, or similar smart card, is not required.

Once the card 500 is securely brought into contact with the reader 300, the domes 330 contact the respective regions of the SIM card, enabling an
25 electrical connection between them to be established. Since the domes are hollow metal domes, they are resilient. This enables the domes to be almost completely flattened against the substrate if a sufficient force can be applied. The result of this is that the space taken up by the reader becomes almost negligible. The entire SIM card and reader arrangement in use is barely
30 thicker than the thickness of the SIM card combined with the substrate 310 of the reader. For clarity, Figure 4 shows a larger gap between the SIM card and the substrate than could be achieved in practice.

7/5/04
1002332-10001